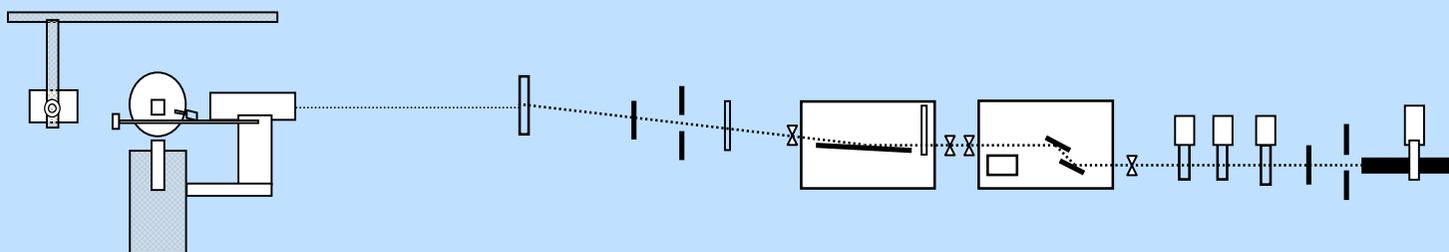


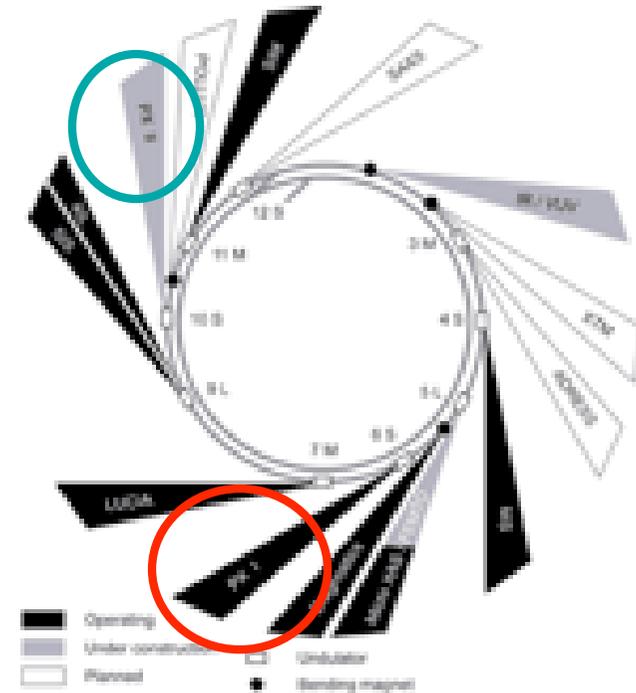
# EPICS at the Protein Crystallography Beamlines of the SLS



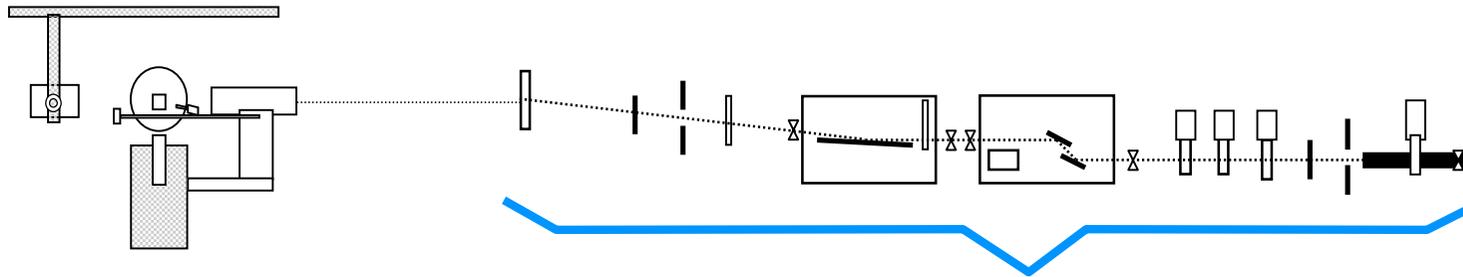
## The Beamlines PX and PXII

PX – in User Operation  
(since 2001)  
EPICS 3.13.2

PX II – under Construction  
(Operation start 1/2005)  
EPICS 3.13.9



# Beamline Schematic



## Experimental Station:

- Detectors
- Sample Mount
- Microscope

## Beam Conditioning:

- Monochromator
- Mirror
- Slits
- X-BPMs
- Filters

## Using EPICS for Beamlines?

What is the difference between an accelerator and a beamline?

- different hardware (motors ...)
- experiment stations change frequently
- beamline users are less experienced in controls
- beamlines are smaller
- more beamlines and all different

# Using EPICS for Protein Crystallography Beamlines!

- users change only crystals, not experiments
- hardware is already supported
- there are many Protein Crystallography beamlines

## **BUT:**

- need **VERY** easy to use software

# How to use EPICS at Beamlines?

## 1. mono-layer PVs between hardware and high level software

- + quick and easy to implement
- every program has to do calculations itself
- programs may be started twice ....

## 2. complex structure of PVs and SNL programs

- + calculations done centrally
- + central functions prevent dual starts
- not so quick and easy to implement
- you need documentation to understand it next year

## Problems and Challenges at Real Beamlines

- VERY tight schedule – „no“ time at the beamlines
- demand of high reliability
- permanent upgrades of hardware
- GUIs have to be fail save (inexperienced users)

## EPICS 3.14 Beamline Simulation

- simulate the hardware on an office pc (all time available, no problems with cabling and adjustment)
- use an EPICS 3.14.x IOC (reboot in 3 seconds)
- use the same configuration files (templates and substitution files)
- some additional work for correct reactions

## Future Prospects of the simulation

- simulate the experiment
- simulate the beam for the whole beamline
- status simulation of error states
- use simulation for operator training
- expand simulation to other beamlines

## Summary

- EPICS is a good choice for PX beamlines
- on the way to a complex but „standardised“ EPICS database
- use a simulation to develop, test and debug database  
(many thanks for developing 3.14!)

**The End.**